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Posted on December 4, 2024 December 4, 2024 by Thunder Said Energy. Grid-forming inverters: islands in the sun? The grid-forming inverter market may soon inflect from $1bn to $15-20bn pa, to underpin most grid-scale batteries, and 20-40% of incremental solar and wind. This 11-page report finds that grid-forming inverters cost c$100/kW more than ...

We have modeled out simple economics for Northern Lights, the most elaborate carbon capture and storage (CCS) scheme ever proposed by the energy industry (Equinor, Shell, TOTAL).. The project involves capturing industrial CO2, liquefying it, transporting it in ships, receiving it onshore in Norway, piping it 110km offshore, then injecting it 3,000m below the seabed.

Today"s lithium ion batteries have an energy density of 200-300 Wh/kg. I.e., they contain 4kg of material per kWh of energy storage. Technology gains can see lithium ion batteries" energy densities doubling to 500Wh/kg in the 2030s, trebling to 750 Wh/kg by the 2040s, and the best possible energy densities are around 1,250 Wh/kg.

The energy uplifts from solar trackers have been estimated at 10-50% in different studies. But we can do better than this broad range, and actually calculate both the energy uplift and the revenue uplift from first ...

The energy demands of AI are the fastest growing component of total global energy demand, which will transform the trajectory of gas and power and even regulated gas pipelines, as recapped on pages 2-3.. These numbers are so material that they deserve some deeper consideration.Hence this 17-page note is an overview of AI computation. Of course, in ...

Thunder Said Energy deliver value-adding insights via their web-platform, which contains hundreds of research reports, data-files and models. Thunder Said Energy was founded by Rob West in 2019, with the aim of bringing a Wall Street researcher"s economic mindset to the energy technologies re-shaping the world.

Geothermal power is produced from 200 geothermal fields globally, feeding 16GW of power capacity, generating around 110 TWH of useful electricity, which equates to 0.4% of the world"s electricity and 0.15% of its total useful energy. But this is confined to geological hotspots. Broader geothermal resources are 5x total global energy demand, the key challenge ...

This data-file captures the development pipeline of new US power capacity, based on 860M reports from the EIA, which cover all existing and proposed generating units of >1MW of greater.As a leading indicator for wind, solar, gas turbine and battery demand, we have aggregated the data in these c110 monthly reports, from 2015 to 2024, to track the pipeline ...

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The past five years of research have led us to conclude that achieving net zero by 2050 would effectively require the largest energy infrastructure construction project in the history of human civilization, absorbing $9 trn pa of capital expenditures.. Whether or not you believe the world will hit its decarbonization goals, a construction boom increasingly seems to ...

Note real world energy consumption can be 20-60% higher than stated by manufacturers or on test-cycles, especially during cold weather. Global electricity consumption for electric vehicles likely reaches 120TWH in 2024 (0.4% of global electricity), rising to 500 TWH in 2030, 1,750 TWH in 2040 and 3,300 TWH in 2050, based on our numbers, which ...

We have spent much of 2024 writing about the rise of AI, and how it will change the energy industry: unlocking new step-changes in industrial efficiency, next-gen DAC or autonomous vehicles; while re-exciting gas generation, compounding grid bottlenecks, wolfing up grids" spare capacity, boosting fiber-optics, industrial cooling, transformers and harmonic filters.

This database contains a record of every company that has ever been mentioned across Thunder Said Energy"s energy transition research, as a useful reference for TSE"s clients. The database summarizes over 3,000 mentions of 1,400 ...

Or more specifically, five energy transitions are underway at the same time. They include the rise of renewables, shale oil, digital technologies, environmental improvements and new forms of energy demand. This is our rationale for establishing a new research consultancy, Thunder Said Energy, at the nexus of energy-technology and energy-economics.

This purchase will enable your email account for the Thunder Said Energy full subscription. This gives you full access to all of our content -- written research reports, downloadable data-files, economic models, patent analysis and company screens -- for one calendar year.. Additional terms: All our content can be shared fully within your organization.

To contextualize the growth that lies ahead, we have compiled data on US power generation installations, year by year, technology by technology, running back to 1950, including implications for turbine manufacturers, on pages 14-16.. The impacts of AI on US gas and power markets sharply accelerate US electricity demand, upgrade our US shale forecasts, especially ...

Thunder Said Energy is a research firm focused on energy technologies and energy transition. We work with over 250 organizations, to help them find economic opportunities, which can improve the world"s energy system, and help the world reach "net zero". We have two subscription tiers (details here).

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